5-acre Corn Club uses computer to improve yields

UNIVERSITY PARK — Growers enrolled in the Five-Acre Corn Club sponsored by Penn State Cooperative Extension Service are learning how to increase their yields through a computer program which makes the best possible use of all production components.

In addition to having yields checked at the end of the growing season, members fill out a detailed report including information on fertilization rates, plant population, how the plot was plowed or tilled, and the type of weed control used. This information is entered into a computer, and, along with data on soil types and other constants, can be used to analyze what the grower needs to do to increase production.

"It's the only source of this type of information in the world," said Dr. Joseph McGahen, Penn State Extension agronomist, who wrote the computer program and helped organize the present structure of the Five-Acre Corn Club. Other states have requested copies of the program, but it specifically incorporates Pennsylvania characteristics and would have to be rewritten for use elsewhere.

McGahen pointed out that a farmer who joins the corn club chooses one field of at least 5 acres. Most members select their most fertile field because at the end of the season, their yields are compared to the yields of every other corn member in the state. The top growers for the year receive trophies at the Farm Show in Harrisburg.

Paul Lawrence of New Castle, last year was named club champion in the shelled grain harvested division with a yield of 224.4 bushels per acre. His crop had a plant population of 26,449 per acre.

In the ear corn harvested class, Wilmer and Mark Kraybill of R3, Elverson, were declared champions with a yield of 228.7 bushels per acre. Plant population for this winning crop was 29,796 per acre.

McGahen keeps an annual chart listing the plant populations for the club in order from the lowest population to the highest. Also listed are the number of growers who planted each population, the yield in bushels per acre produced by each population, and the amount of nitrogen applied in each case.

Logic is that if you increase the plant population per acre, you should increase production, the Penn State agronomist noted. But this did not hold true for the two largest populations in 1981. Yields were lower than the yield of the third largest population.

"Here's our answer," McGahen said, looking at the computer printout. "A larger quantity of nitrogen was applied for each larger population except the two largest. These growers planted corn but didn't apply more nitrogen."

The computer readout makes the answer very simple. Each time the plant population is increased, you must increase the amount of nitrogen if you want a higher yield.

The Extension agronomist emphasized that the completeness of the computer program enables it to provide answers to almost any question about methods of corn production and how it relates to yield. For each grower in the club over the last 15 years, there are about 70 separate items of data stored in the computer.

Summaries of this information are used by county Extension agents who distribute them to growers at production clinics. Farmers not in the program query top growers, ask them what results they received and what practices they used to get them. "It's education over the fence." McGahen said. "It has encouraged growers to adopt those practices that the higher-yield producing farmers are using."

A direct benefit for all Five-Acre Corn Club participants is that they can request a cost analysis for their crop. Tabulated by the computer from information the grower provides, the analysis gives the individual grower a comparison between his or her cost of production and the final income brought in by the crop. Efficiency of conr production is more important than high yields.

"The cost analysis also can benefit people who have never grown corn but would like to. By using computer data, they can formulate a budget to determine whether corn would be profitable for them. They also can take the budget to the bank when requesting a loan to begin corn production," the specialist emphasized.

On a large scale, the data produced through this Extension program show that a need exists for education among some of the state's corn producers. It also shows a need for research based on the results and practices of the higher yield producers so those growers can continue to improve their yields, McGahen added.

Certainly yields will no improve indefinitely; he admitted that it's impossible to go beyond a certain level of production. But McGahen feels that Pennsylvania corn production has not yet reached its peak despite a leveling off in recent years.

Growers join the Five-Acre Corn Club both to learn and to compete. Some have stayed with the program almost every year, while others leave after 1 or 2 years. Extension agents set the number of participants for their counties because they must personally check the yield of each member's plot. Each yield check takes about half a day. Almost 400-plus growers from 50 counties compete each year.

"There is no fee to join the club, although participants must buy a soil test kit from the University. Commercial seed companies donate money to the club to pay for the trophies and ribbons awarded are handled by the Pennsylvania Master Corn Growers' Association," the agronomist emphasized.

The highest yield recorded in Pennsylvania was 247.9 bushels per acre. This crop was produced in 1981 by Jeff Pontius of R1 Northumberland. However, in New Jersey, a Rutgers University researcher produced over 300 bushels per acre.

USDA

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and disease grants in order to maintain more basic projects.

Only $21.5 million is proposed for the competitive research grants, which, said Bentley, "is more than has been appropriated in recent years but is a decrease from past budget requests. This level would permit a new program of basic research in animal reproduction problems for the first time."

For the National Agricultural Library, the 1983 funding level is $8.7 million. In fiscal year 1984, an increase of $1.1 million is proposed.

"This increase will help implement the recommendations of a blue ribbon panel, including executives of other libraries," said Bentley. That panel found a critical need for improved services by the library and recommended increased funding and staffing as well as other changes.

Bentley said the added library funds will be used primarily to extend the hours of service, improve collections, do needed building repairs and improve biographical data bases, and hence, make the entire agricultural science and education system more efficient.